Quantitative chemistry

Frayer models are a simple but effective way to develop learners' understanding of a new piece of vocabulary. You will see what your learners already know and identify any misconceptions they have. The key term is placed in the middle of four quadrants; ask learners to populate the quadrants in turn.

- **Explore:** link to science capital and find out what learners already understand about the term. Ask learners where they have heard the term before, or what it makes them think of.
    - How learners respond will directly link with their science capital. Read about Frayer models and science capital at: rsc.li/4mlll3A
    - Find out more about science capital at: rsc.li/40FAMLP
- **Break down**: look at composite parts of the word to understand its meaning more deeply. Lead your class through this quadrant by referencing the etymology provided in the notes section of the learner slides (and mirrored in the answer slides).
    - Where a term doesn't break into neat composite parts, this quadrant is called '**What do we know about** … '. It lists some points to aid discussion and also includes etymology.
- **Explain**: introduce the definition. This quadrant is in two parts. First, get learners to answer the question related to the definition, then encourage them to compare their answer with the definition on the answer slide. Definitions are from this topic's key terms list, which you can access at: rsc.li/3Gi9HHN.
- **Consolidate**: get learners to apply their knowledge of the term by answering a question.

How to use Frayer models

Print out the Frayer model slides for the key terms you want to explore and hand them out. Ask learners to fold the along the black lines and concentrate on completing one quadrant at a time.

- The dotted line in quadrant three (**explain**) separates learners' attempted definitions from the ones provided, which they can copy onto the model for reference.
- Additional information is provided in the notes section of the learner slides. This includes answers to quadrants 2 and 3 for reference.

Ask learners to unfold the paper when they have completed their model and reflect on how much they now know about the term.

Other ways to use

- Print the resource and use as a 'think, pair, share' style activity.
- Use mini whiteboards to enhance class discussion.

© 2026 Royal Society of Chemistry

- Print out large format (e.g. A3) and set up different stations around the classroom for each Frayer model. Learners move around the room in groups to complete one quadrant at a time.

Scaffolding

These resources are supplied in a unscaffolded (✪✪) and scaffolded (✪) format. For some learners, the **explore** quadrant proves a particular challenge, so give them more time, support and explicit instruction to use these models. Don't worry if it doesn't work first time.

The scaffolded format provides learners with:

- prompts for the **explore** quadrant
- more information in the **break down** section for connecting the composite parts of words
- hints and tips in the **explain** section to support learners in answering the questions
- more support in the **consolidate** section.

Tips for adapting Frayer models

- Highlight common prefixes, suffixes and translations. This can be helpful for learners.
- Link to similar words to help learners suggest possible meanings.
- In the **explain** quadrant, include diagrams, examples and non-examples.
- Add a stretch question to the **consolidate** quadrant to deepen understanding.

Read more about Frayer models and their use: rsc.li/4jpOnhW and rsc.li/42paFJL.

© 2026 Royal Society of Chemistry